THE FIRE WEATHER OPERATIONS PLAN

FOR NORTHERN AND DOWNEAST MAINE

2008

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ATTACHMENTS

1.0 INTRODUCTION

The National Weather Service (NWS) Forecast Offices in Caribou and Gray Maine will provide fire weather support for the State of Maine. **Each forecast office will generally be responsible for the fire weather forecast within their county warning area (CWA).** Fire weather zones, however, do not correspond exactly to NWS public forecast zones (PWMZFPCAR or PWMZFPGYX).

A general Fire Weather Forecast for the State of Maine will be issued daily during the fire weather season by the forecast offices of Gray and Caribou. Also, spot forecasts for wildfire support will be available throughout the year, 24 hours a day from each of the above mentioned forecast offices.

The NWS cannot provide formal spot forecasts for non-wildfire situations, such as prescribed burns and smoke management, for non-federal land areas.

This Operations Plan will explain the types of information available for Fire Weather support and the sources of this information.

This plan will be reviewed bi-annually by all parties. Proposed changes to this plan will be approved by all parties before such changes are implemented.

2.0 FORECAST AREAS

Maine is divided among two NWS Offices for weather forecast and/or weather warning responsibility (see Attachment A).

The state is divided as follows:

Forecast Office	**Area of Responsibility**
Caribou	All of Northern and Downeast Maine (Fire Weather Zones 11,12,14 and 16)
Gray	All of Southern and Western Maine (Fire Weather Zones 10,13 and 15)

3.0 FIRE SEASON

The normal fire season for CAR will extend from April through November, but is highly dependent on when winter snow cover ends and begins respectively. For this reason, the beginning and ending of the fire weather season will **always** be coordinated with the State of Maine Forest Service and WFO Gray (see section 13). WFO CAR will issue the fire weather forecast under PWMFWFCAR.

4.0 ISSUANCE TIME OF NORMAL FORECASTS

The Northern and Downeast Maine Fire Weather Forecast will be issued by the public forecaster daily by 630 am local time during the Fire Season.

5.0 FIRE WEATHER ZONE FORECAST

The fire weather forecast will be issued for 4 Northern and Downeast Maine zones each having at least one city and/or point forecast (see Attachment A).

The fire weather forecast will cover specific conditions for a 36 hour period and consist of three 12-hour periods (today, tonight and tomorrow). The product will contain a general 3-5 day extended forecast for Northern/Downeast Maine.

The forecast is based on NWS computer generated guidance (FWC model output statistics) in and around the State of Maine. **It=s important to note that the computer generated forecast is a first guess and should be tailored to match zone forecasts and the specified allowable ranges of relative humidity and wind.**

The fire weather product issued will include the following information (see Attachment B):

1) A headline for red flag warnings, fire weather watches, or the most pertinent weather elements of the day.

2) A brief non-technical synopsis of important weather systems.

3) Forecast elements for each zone (see 5.1).

4) Extended forecast (including an 8 to 14 day outlook).

5.1. ELEMENTS USED IN THE DAILY FIRE WEATHER ZONE PRODUCT

Most elements contained within the fire weather zone product will be directly derived from: 1) public zone parameters from the Graphical Forecast Editor (GFE)grids within the Advanced Weather Interactive Processing System (AWIPS),and 2), model soundings. Model sounding locations include Greenville, Caribou, Houlton, Bangor, and Bar Harbor.

5.1.1 CLOUD AMOUNT

A. Clear -- Little or no cloud cover.
B. Partly Cloudy (Sunny) -- 1/lOth to 5/lOths of the sky covered with clouds.
C. Mostly Cloudy -- 6/lOths to 9/lOths of the sky covered with clouds.
D. Cloudy -- The entire sky is covered with clouds.

5.1.2 CHANCE OF PRECIPITATION

The chance for measurable precipitation (0.01 inch liquid equivalent or more) within each zone for every 12 hour period. Values range from 0% (no chance) to 100% (measurable precipitation certain to occur).

5.1.3 PRECIPITATION TYPE

Rain, rain showers, thunderstorms, snow, and snow showers will be the most commonly forecasted precipitation types within the fire weather zone forecast.

5.1.4 MAX/MIN TEMPERATURE

The temperature will be in degrees Fahrenheit. The maximum temperature is for 7 am to 7 pm EST (8 am to 8 pm EDT) for the TODAY and TOMORROW periods. The minimum temperature is for 7 pm to 7 am EST (8 pm to 8 am EDT) for the TONIGHT period.

5.1.5 WIND - DIRECTION AND SPEED

The wind direction applies to the direction from which the wind will blow. The direction will be listed using the 8 point compass (e.g. NE, SE, SW, etc.). The wind speed will be given in miles per hour (mph). The speed, calculated over successive 2 minute averages, is forecasted for the standard 20 foot level. All wind forecasts are the average wind speed and corresponding wind direction for each twelve hour period. Significant wind gusts of 25 mph or more will be mentioned in the remarks section of each zone. Zone matrices within ICWF will allow a delineation of AM vs PM winds in the day periods of the fire weather forecast, with sudden-short term wind changes addressed in the remarks portion of each zone.

5.1.6 PRECIPITATION AMOUNT/DURATION/BEGIN-END TIMES

Precipitation amount will be given in hundredths of an inch for each period a chance of precipitation is forecasted. The amount forecasted will be given in incremental ranges. Generally, if the chance of rainfall is less than 60 percent for an individual period, the forecast rain amount will not exceed the 0.01 to 0.10 inch category. An exception to this rule is when scattered (50 percent or less coverage) showers (thunderstorms) are capable of producing localized higher category rainfall amounts; in which case, the remarks section will state most locations will receive little if any rainfall).

The precipitation duration number represents the duration of precipitation in hours for each period. Precipitation begin time will indicate the start of precipitation and the precipitation

end time, the end of precipitation. Use of the word Acontinuing@ implies precipitation extending from on period to the next. For the purpose of the fire weather zones, the day period is defined from 7 AM to 7PM and the night period 7 PM to 7 AM local time. Note that if showers (thunderstorms) are forecast, duration will be less than the total time between the start and end times, since showers and thunderstorms are defined to be intermittent periods of rainfall.

5.1.7 RELATIVE HUMIDITY

The Relative Humidity is the ratio, in percent, of the amount of moisture in the air compared to the amount the air could hold if fully saturated (100%). The range is from 0% up to 100%.

Usually, the minimum relative humidity occurs at the time of the maximum temperature and the maximum relative humidity occurs at the time of the minimum temperature. Because of the dependency of the relative humidity upon temperature, it should be noted that if the temperature is under (over) forecast, then the relative humidity forecast will be too high (low).

5.1.8 HAINES INDEX

See Attachment E.

5.1.9 LIGHTNING FREQUENCY

A forecast interval of the number of cloud to ground lightning strikes expected with thunderstorms (when thunderstorms are forecasted).

5.1.10 MIXING HEIGHT

See Attachment E.

5.1.11 TRANSPORT WINDS, VENTILATION, AND SMOKE DISPERSION

See Attachment E.

5.1.12. REMARKS

When necessary, any pertinent information best relayed in a narrative format including, but not limited to:

A. snow accumulation
B. timing of sustained winds exceeding or falling below 20 mph or wind gusts reaching or exceeding 25 mph.
C. length of time afternoon relative humidities will remain below 40 percent.

5.2 DISSEMINATION OF THE FIRE WEATHER FORECAST

The fire weather forecast for Northern/Downeast Maine will be available on the Internet through the Caribou NWS Homepage daily during the fire weather season by 630 AM. The Fire Weather Forecast will also be sent on the Automated Weather Information Processing System (AWIPS) under the WMO header FXUS7 KCAR.

The NWS Internet addresses for fire weather offices serving Maine are:

Caribou http://www.nws.noaa.gov/er/car/
Gray http://www.nws.noaa.gov/er/gyx/

6.0 SPOT FORECASTS FOR WILDFIRE SUPPORT

The spot forecast is a site-specific, localized weather forecast available for wildfire support. This product includes a forecast of wind, temperature, humidity and any effects local topography will have on the weather. The parameters forecast should be the worst case scenario expected.

When requests for special spot forecasts from forest agencies arrive via the internet, phone or fax, complete the forecast online (preferably), or fill out the form in Attachment C. Then issue the forecast to the requesting agency within 30 minutes of their original request time. If the forecast request is received on our web page, then fill out the forecast parameters online and send back via the internet. The following information must be exchanged when a spot forecast is requested:

The requesting agency will provide the following:

1). The name of the agency.
2). Time, location and size of the fire.
3). Elevation/Geography/Topography.
4). Recent weather observations if any.
5). Any additional information that would help the forecaster.

The duty forecaster will provide the following:

1). Time period of forecast (usually for 12 hours).
2). Brief synopsis.
3). Temperature forecast
4). Relative humidity forecast (minimum during the day, maximum at night).
5). Wind direction and speed at 20 foot level. State height if other than the 20 foot level. Timing of any wind changes.
6). Probability of precipitation.
7). Mesoscale features associated with thunderstorms/fronts.
8). Other weather phenomena deemed important.

7.0 FIRE WEATHER WATCH/RED FLAG WARNING

Specific conditions must be met for a Fire Weather Watch and/or a Red Flag Warning to be issued. They are:

When the mean of 1 hour and 10 hour fuel moistures are less than 10% in combination with the following weather conditions:

1) **Sustained 20 to 30 foot Wind Speeds (or frequent gusts)**

Daytime Minimum Relative Humidity	10-15 mph	15-20 mph	20-30 mph	30+ mph
30 to 35%				W
25 to 30%			W	W
20 to 25%		W	W	W
less than 20%	W	W	W	W

Where W = Watch or Warn

and preferably, 2) Haines Index of 5 or 6 (see Attachment E).

A **"Fire Weather Watch"** is used to alert the user of the possible development of a Red Flag event from 12 to 36 hours in advance (with longer watch times possible in the event of a holiday.) A fire weather watch may be issued within 12 hours for the very rare occurrence of dry thunderstorms.

A **"Red Flag Warning"** will be issued to warn users of an impending or on-going Red Flag event. A Red Flag Warning will be issued for impending Red Flag conditions when there is a high degree of confidence that conditions will develop and the forecast time of onset for the event is less than 24 hours from the forecast issuance time.

If a Fire Weather Watch or Red Flag Warning is issued, it will be included as a HEADLINE in the fire weather forecast (PWMFWFCAR) above the synopsis. Also a statement **PWMRFWCAR** will be issued. Fire Weather Watches or Red Flag Warnings, however, will **not** be highlighted in corresponding public zone forecasts (PWMZFPCAR).

Because of the restrictions on user programs brought about by a Red Flag Warning, it is imperative that the warning be promptly cancelled when the conditions cease to exist or if the conditions are no longer expected to develop. **A statement (PWMRFWCAR) will be needed to cancel the Red Flag Warning or Fire Weather Watch. Also the Red Flag Warning and Fire Weather Watch may be issued after the routine issuance. If this happens the Fire Weather Forecast will need to be updated with the headline.**

Only the Fire Weather Watch should be in affect for longer than the valid time of the forecast. **A Fire Weather Watch can be in effect up to 72 hours from the initial issuance of the FWF.**

A statement stating the Fire Weather Watch or Red Flag Warning is cancelled is placed in the forecast and an RFW is issued.

The watch or warning shall not be mentioned in the AFD.

EXAMPLES:

These statements may be placed on CRS and will go to the internet automatically.

Statement(similar to a PNS):

THE SPECIFIC COUNTY NAMES DO NOT HAVE TO BE MENTIONED IN THE WATCH STATEMENT (PWMRFWCAR)...HOWEVER...USE SPECIFIC COUNTY NAMES WITH RED FLAG WARNINGS (ALSO UNDER PWMRFWCAR) WHEN ISSUING FOR ONLY A PORTION OF THE CWA.

ZCZC PWMRFWCAR
TTAA00 KCAR 081100
MEZ001>006-010-011-015>017-029-030-091200-

FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE CARIBOU ME
700 AM EDT WED OCT 8 2000

...A FIRE WEATHER WATCH IS IN EFFECT FOR ALL OF NORTHERN AND DOWNEAST MAINE THURSDAY...

HUMIDITY LEVELS ARE EXPECTED TO FALL TO 25% OR LOWER AND WINDS ARE EXPECTED TO EXCEED 15 MPH THURSDAY. THESE CONDITIONS WILL CAUSE THE THREAT OF WILDFIRES TO BE VERY HIGH.
$$

VJN

ZCZC PWMRFWCAR
TTAA00 KCAR 081100
MEZ001>006-091200-

RED FLAG WARNING
NATIONAL WEATHER SERVICE CARIBOU ME
700 AM EDT WED OCT 8 2000

...A RED FLAG WARNING IS IN EFFECT FOR NORTHERN MAINE THROUGH THURSDAY...

HUMIDITY LEVELS WILL BE 25% OR LOWER THIS AFTERNOON AND AGAIN

THURSDAY AFTERNOON AND THE WINDS WILL BE FROM THE SOUTH AT 20 TO 30 MPH. THE THREAT OF WILDFIRES WILL BE EXTREMELY HIGH.

AS A RESULT A RED FLAG WARNING HAS BEEN ISSUED FOR NORTHWEST AROOSTOOK...NORTHEAST AROOSTOOK...NORTHERN SOMERSET...NORTHERN PISCATAQUIS...NORTHERN PENOBSCOT AND SOUTHEAST AROOSTOOK COUNTIES.

$$

VJN

ZCZC PWMRFWCAR
TTAA00 KCAR 081100
MEZ001>006-010-011-015>017-029-030-091200-

RED FLAG WARNING/FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE CARIBOU ME
700 AM EDT WED OCT 8 2000

...RED FLAG WARNING IS IN EFFECT FOR ALL OF AROOSTOOK COUNTY THROUGH THURSDAY...

...FIRE WEATHER WATCH IS IN EFFECT FOR ALL OF NORTHERN/DOWNEAST MAINE THROUGH FRIDAY...

TEXT
$$

VJN

CANCELLATIONS:

ZCZC PWMRFWCAR
TTAA00 KCAR 081100
MEZ001-002-006-091200-

RED FLAG WARNING...CANCELLATION
NATIONAL WEATHER SERVICE CARIBOU ME
700 AM EDT WED OCT 8 2000

THE RED FLAG WARNING HAS BEEN CANCELLED FOR ALL OF AROOSTOOK COUNTY MAINE.

SHOWERS AND THUNDERSTORMS WILL OCCUR TODAY AND THAT WILL CAUSE AN INCREASE IN THE RELATIVE HUMIDITY LEVELS ACROSS AROOSTOOK COUNTY. THIS SHOULD DECREASE THE THREAT OF WILDFIRES.
$$

VJN

FORECASTS:

FIRE WEATHER FORECAST
NATIONAL WEATHER SERVICE CARIBOU ME
630 AM EDT THU SEP 9 1999

.SYNOPSIS...ETC

FIRE WEATHER FORECAST
NATIONAL WEATHER SERVICE CARIBOU ME
630 AM EDT THU SEP 9 1999

...RED FLAG WARNING FOR ALL OF AROOSTOOK COUNTY CANCELLED...

.SYNOPSIS...ETC

If a Fire Weather Watch or a Red Flag Warning is needed:

1. If you believe a watch or warning is needed for **any zone within our area,** call the appropriate forestry agency (see section 13).

2. Then Coordinate with WFO GYX.

The day shift should call the Maine Forest Service Monday through Friday during business hours. If the agency is not available, continue to try and contact them, but DO NOT issue the watch or warning. If there is a reasonable chance that the criteria for a warning will be met during non-business hours, then WFO CAR shall coordinate with the Maine Forest Service ahead of time during business hours. Then the swing or midnight shift are permitted to issue the warning as needed.

Summary of what to do if we issue a Fire Weather Watch or Red Flag Warning:

1. Coordinate with the appropriate forest agency.

2. Coordinate with GYX.

3. Place the appropriate headline in the FWF.

4. Issue the PWMRFWCAR for the initial, continuation, or cancellation of a fire weather watch or red flag warning. A RFW is not needed when a red flag warning expires.

8.0 AFTERNOON POINT FORECASTS AND THE NFDRS

One afternoon point forecast for Bar Harbor (Acadia National Park) shall be composed daily and disseminated by 3:30 PM in the **PWMFWMCAR** product header. The format for this product is as follows:

FCST,170701,YYMMDD,13,X,TT,RH,L1,L2,DD,SS,,TX,TN,RH,RN,P1,P2,F

Where: **YYMMDD** is the year, month, and day of the forecast.
13 local time (does not change).
X is a weather code: 0=clear, 1=scattered clouds(mostly clear), 2=broken clouds(partly to Mostly cloudy), 3=overcast, 4=fog, 5=drizzle, 6=rain, 7=snow/sleet, 8=showers, and 9=thunderstorms.
(for next day)
TT is a 21 hour - 1300 LT temperature forecast.
RH is a 21 hour - 1300 LT relative humidity forecast.
L1 and **L2** are lightning activity levels (LALs)for 1300-0600 and 0600-1300 local time respectively.
code: 1=none, 2=1-8 strikes, 3=9-15 strikes 4=15-25 strikes, 5= >25 strikes, 6= scattered dry thunderstorms(very rare).
DD is wind direction using 8-point compass headings.
SS is 20 or 30 foot wind speed (10 minute average in mph).
TX is a forecast 24 hour maximum temperature.
TN is a forecast 24 hour minimum temperature.
RX is a forecast 24 hour maximum relative humidity.
RN is a forecast 24 hour minimum relative humidity.
P1 is precipitation duration (1300-0600 period) in hours.
P2 is precipitation duration (0600-1300 period) in hours.
F is a Y/N flag for widespread wetting rains (0.25+ inches).

In addition...the National Fire Danger Rating System (NFDRS) and drought indices such as CPC=s Drought Monitor should be reviewed daily to monitor the dryness of ground fuels. The categories of concern are **high through extreme for the NFDRS** and **D2 through D4 for the Drought Monitor**. Should the fire danger category reach or exceed the high category for any zone **and** relative humidity and wind conditions are expected to meet watch/warning criteria (specified in section 7) within the first 3 days of the fire weather forecast, call the appropriate points of contact and (listed at the end of this SDM section) and discuss whether fire weather watches or red flag warnings are needed.

8.1 DISSEMINATION OF THE FIRE DANGER RATING

After coordinating with the state of Maine Forest Service; upon receipt of a high, very high, or extreme fire danger rating, the rating shall be broadcast on the appropriate NOAA weather radio station via a **PUBLIC INFORMATION STATEMENT** (PNS). The PNS will also be available on the appropriate internet site(s).

An example of a PNSCAR is shown below:

PWMPNSCAR
TTAA00 KCAR 051950
MEZ010-011-015>017-029-030-062100-
PUBLIC INFORMATION STATEMENT
NATIONAL WEATHER SERVICE CARIBOU ME
330 PM EDT WED MAY 5 2000

THE MAINE DIVISION OF FORESTRY HAS INDICATED THAT THE WILDFIRE DANGER FOR THURSDAY ACROSS DOWNEAST MAINE IS HIGH. CHECK WITH YOUR LOCAL FIRE DEPARTMENT OR FORESTRY OFFICE TO SEE IF A BURNING BAN IS IN EFFECT.

9.0 NOAA WEATHER RADIO

Portions of Northern and Downeast Maine are covered by a NOAA Weather Radio network. These 24-hour broadcasts provide continuous up-to-date weather information directly from the NWS. Automated or taped weather messages are repeated every 5 to 10 minutes, and are routinely revised as needed. The broadcasts are tailored to the weather needs of the people within the receiving area. These broadcasts can usually be heard as far as 40 miles or more from the antenna site depending on terrain, receiver quality, and other factors.

NOAA Weather Radio transmitter sites serving Maine and their assigned frequency are listed below:

Frenchville..162.475 MH
Mars Hill....162.525 MH
Greenville…..162.425 MH
Milo……..162.450 MH
Springfield….162.500 MH
Ellsworth....162.400 MH
Meddybemps…..162.425 MH
Jonesboro……..162.450 MH

High to Extreme Fire Danger Ratings, Fire Weather Watches and/or Red Flag Warnings will be broadcast on the appropriate NOAA weather radio.

10.0 SURFACE OBSERVATIONS

The Automated Surface Observing System (ASOS) is located at 6 sites across Northern and Downeast Maine (see attachment D). A complete weather observation is available 24 hours a day by calling the site. The observation locations and telephone numbers are listed below:

ID	LOCATION	TELEPHONE
FVE	Frenchville	207-543-7456
CAR	Caribou	207-496-3153
HUL	Houlton	207-532-1584
GNR	Greenville	207-695-0732
MLT	Millinocket	207-723-8396
BGR	Bangor	207-947-5293

In addition to the ASOS observation, Automated Weather Observations (AWOS) are available from the following sites:

ID	LOCATION	TELEPHONE
PQI	Presque Isle	207-764-7248
BHB	Bar Harbor	207-667-7364

11.0 AIR TRANSPORTABLE MOBILE UNIT SUPPORT

Large wildfires in Maine may need an incident response. If the situation should arise, the Maine Division of Forestry would request an AIR TRANSPORTABLE MOBILE UNIT (ATMU). A request for this unit by the state shall be done through the U.S. Forest Service Eastern Area Coordination Center in Milwaukee. The telephone number for the Coordination Center is 414-297-3690 or 3777.

The ATMU consists of four modules with a combined weight of 300 pounds. A separate MicroREMS (Remote Environmental Monitoring system) unit should be requested. The ATMU provides the equipment and supplies for field meteorological operations. The user agency must provide a relatively clean and dry working environment as well as a normal electric power supply. A static free telephone line is also needed.

The local user agency requesting the on-site forecast service has the primary responsibility for paying for the transportation of the ATMU unit and ATMU meteorologist to and from the incident. The cost can be up to $350 a day.

12.0 REQUESTS FOR HISTORICAL WEATHER INFORMATION

Agencies requiring historical weather information for specific locations should contact the appropriate NWS office listed in section 13.0. If the requested historical information is available, the NWS will disseminate the information via telephone, fax or mail, depending on the needs of the user agency. Their will be no charge if the request is from a government agency (city/state/federal)

Whenever possible, NWS offices will attempt to disseminate this information at the time of the request with little or no delay. However, because of staffing and/or operational priorities, NWS offices will often not be able to process such requests immediately. User agencies should anticipate such delays and request information as far in advance as possible.

13.0 POINTS OF CONTACT

Federal Agencies:

Acadia National Park
P.O. Box 177
Bar Harbor, ME 04609
Contact: Doug Jones
(Fire Management Officer)
207-288-8780-office number
207-288-8791-dispatch
Fax 207-288-8792

US Fish and Wildlife Service
1033 S. Main Str
Old Town, ME 04468
Contact: Rick Vollick (FMO)
(973-702-7266 X 19) NJ
John Meister,(prescribed
burn specialist)
207 827 6138

State Agencies:

Maine Forest Service Augusta
RR #1 Box 650
Augusta, ME 04330
Contacts: Bill Williams (State Forest Fire Supervisor)
207-287-4991
Alan Hammond (Maine State Training Coordinator)
207-287-4993
David Hilton (Bolton Hill Office)
207-624-3700

Maine Forest Service Old Town
87 Airport Road
P.O. Box 415
Old Town, Maine 04468
Contacts:
Mike Ricci 207-827-1808 Fax 207-827-8441
Wilma Laughlin 207-827-1800

WEATHER SERVICE FORECAST OFFICES:

FWFP = FIRE WEATHER FOCAL POINT

Caribou
National Weather Service
810 Main St
Caribou, ME 04736

FWFP Mark Bloomer
Phone 207-492-0166
FAX 207-492-0160

Gray (Portland)
National Weather Service
1 Weather Lane
P.O. Box 1208
Gray, ME 04039-1208

FWFP Kirk Apffel
Phone 207-688-3216
FAX 207-688-3230

Taunton (Boston)
National Weather Service
445 Myles Standish Blvd
Taunton, MA 02780

FWFP Hayden Frank
Phone 508-823-2087
FAX 508-823-2321

REGIONAL:

National Weather Service
Eastern Region Headquarters
Airport Corporate Center
630 Johnson Avenue
Bohemia, NY 11716

Regional Fire Weather
Services Program Leader
Harvey Thurm W/ER1x3
516-244-0124
Fax 244-0167

U.S. Forest Service - Region 9
Eastern Area Coordination Center
Bishop Henry Whipple Federal Building
1 Federal Drive Room G/20
Fort Snelling, Minnesota 55111
612-713-7311

2007 Fire Season Customer Signature Page

Maine Forest Service _____ Date _____

Acadia National Park _____ Date _____

U.S. Fish and Wildlife Service _____ Date _____